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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/799,707	03/15/2004	Hidenori Shindoh	250438US2	8967

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EXAMINER	
HANG, VU B	

ART UNIT	PAPER NUMBER
2625	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/799,707	SHINDOH ET AL.	
	Examiner	Art Unit	
	Vu B. Hang	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date __.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

- This office action is responsive to the application filed on 03/15/2004.
- Claims 1-28 are pending in the application.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-2, 5, 8-10, 12-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (US Patent 6,801,340 B1) in view of Grosse et al. (US Patent 5,636,294).

3. Regarding **Claim 1**, Endo discloses an electronic device which receives image data, and converts the image data for outputting therefrom (see Fig.3 (305,308), Col.3, Line 28-44 and Col.3, Line 57-66), comprising: a plurality of conversion units configured to convert the image data (see Fig.3 (308), Col.5, Line 30-34 and Col.6, Line 33-36); a control unit configured to control the conversion units (see Fig.3 (308) and Col.5, Line 45-53); an image data transfer unit configured to transfer the image data between the control unit and at least one of the conversion units (see Fig.3 (302), Col.5, Line 30-34 and Col.5, Line 45-53). Endo fails to disclose a clock unit configured to provide synchronization between the control unit and at least one of the conversion units for transfer of image data. Grosse, however, discloses an image data compression system wherein a clock (counter) and a buffer are used to synchronize

predetermined blocks of image data into a compression processor unit for image conversion (see Fig.12 (340,354,362), Col.13, Line 26-39, Col.13, Line 45-53 and Col.14, Line 12-14).

4. Endo and Grosse are combinable because they are from the same field of endeavor, namely image data compression systems. At the time of the invention, it would have been obvious for one skilled in the art to include to Endo's device a clock unit configured to provide synchronization between the control unit and at least one of the conversion units for transfer of image data. The motivation would be to regulate the transmission of image data to the image conversion units at a predetermined rate. The synchronizing clock unit can ensure steady flow of image data into the compression processor to increase processing efficiency.

5. Regarding **Claim 2**, Endo discloses wherein the control unit supplies to one of the conversion units a signal (command) indicative of a start of transfer of the image data when transferring the image data to one of the conversion units (see Fig.3 (302,308), Fig.9 (S907,S909) and Col.5, Line 45-50).

6. Regarding **Claim 5**, Endo further discloses wherein one of the conversion units supplies to the control unit a signal (command) indicative of a start of transfer of the converted image data to the control unit for transmitting the converted image data to a designated receiver unit (see Fig.3 (302,305,308,309) and Col.5, Line 53-56).

7. Regarding **Claim 8**, Grosse further discloses an interruption unit configured to output an interruption signal to the control unit for processing the image data at a predetermined size (see Fig.15 (454,464,470) and Col.15, Line 23-36).

8. Regarding **Claim 9**, Grosse further discloses the interruption unit outputs the interruption signal in response to a completion of conversion of image data that is equal to a predetermined amount (see Fig.15 (454,464,470) and Col.15, Line 23-36).

9. Regarding **Claim 10**, Grosse discloses the interruption unit of Claim 8 but fails to expressly disclose that the interruption unit outputs the interruption signal in response to a completion of conversion of image data that is equal in amount to one page of a print sheet. Grosse, however, teaches outputting the interruption signal in response to a completion of conversion of image data that is equal to a predetermined amount (see Fig.15 (454,464,470) and Col.15, Line 23-36). At the time of the invention, it would have been obvious for one skilled in the art to include to the interruption unit a means for outputs the interruption signal in response to a completion of conversion of image data that is equal in amount to one page of a print sheet. The motivation would be to process (compress) the image data one page data at a time, since the print data is processed (rasterized) page by page basis.

10. Regarding **Claim 12**, Endo further discloses wherein the control unit makes one of the conversion units convert the image data according to a request indicative of a conversion that is applied to the image data (see Fig.9 (S902,S903), Col.6, Line 18-28 and Col.6, Line 33-35).

11. Regarding **Claim 13**, Endo further discloses wherein the control unit selects one of the conversion units according to the request so as to make the selected one of the conversion units convert the image data (see Fig.3 (302,308), Fig.9 (S909) and Col.6, Line 46-51).

12. Regarding **Claim 14**, Endo further discloses wherein the request specifies a format of the image data prior to conversion and a format of the converted image data (see Fig.9 (S902,S903), Col.6, Line 18-28 and Col.6, Line 33-35).

13. Regarding **Claim 15**, the rationale provided for the rejection of Claim 1 is incorporated herein.

14. Regarding **Claim 16**, an official notice is taken that it is known in the art that a processing hardware unit of a computer system are implemented with a program stored in a computer chip.

15. Regarding **Claim 17**, an official notice is taken that it is known in the art that the processing functions of the hardware of an image processing computer system are implemented on printed circuit boards that are connectable to an upper-order apparatus such as a scanner unit or a multifunction peripheral device.

16. Regarding **Claim 18**, Endo further discloses wherein the image data is received from the upper-order apparatus, and the converted image data is output to the upper-order apparatus (see Fig.3 (302,305,308,309) and Col.4, Line 22-28).

17. Regarding **Claim 19**, Endo further discloses wherein the control unit is also configured to convert the image data (see Fig.3 (308) and Col.5, Line 45-53).

18. Regarding **Claim 20**, Endo discloses an image forming apparatus (see Fig.3, Col.3, Line 28-44 and Col.3, Line 57-66), comprising: hardware resources configured to form images (see Fig.2 and Col.3, Line 28-44); a memory having a program stored therein for causing the hardware resources to form the images (see Fig.2, Col.3, Line 28-44 and Col.8, Line 39-43); and an electronic device which receives image data, and converts the image data for outputting therefrom (see Fig.3 (305,308), Col.3, Line 28-44 and Col.3, Line 57-66), comprising: a plurality of conversion units configured to convert the image data (see Fig.3 (308), Col.5, Line 30-34 and Col.6, Line 33-36); a control unit configured to control the conversion units (see Fig.3 (308) and

Col.5, Line 45-53); an image data transfer unit configured to transfer the image data between the control unit and at least one of the conversion units (see Fig.3 (302), Col.5, Line 30-34 and Col.5, Line 45-53). Endo fails to disclose a clock unit configured to provide synchronization between the control unit and at least one of the conversion units for transfer of image data. Grosse, however, discloses an image data compression system wherein a clock (counter) and a buffer are used to synchronize predetermined blocks of image data into a compression processor unit for image conversion (see Fig.12 (340,354,362), Col.13, Line 26-39, Col.13, Line 45-53 and Col.14, Line 12-14).

19. Endo and Grosse are combinable because they are from the same field of endeavor, namely image data compression systems. At the time of the invention, it would have been obvious for one skilled in the art to include to Endo's device a clock unit configured to provide synchronization between the control unit and at least one of the conversion units for transfer of image data. The motivation would be to regulate the transmission of image data to the image conversion units at a predetermined rate. The synchronizing clock unit can ensure steady flow of image data into the compression processor to increase processing efficiency.

20. Regarding **Claim 21**, Endo further discloses a conversion request generating unit wjich generates a conversion request, wherein the electronic device converts the image data in response to the conversion request (see Fig.9 (S902,S903), Col.6, Line 18-28 and Col.6, Line 33-35).

21. Regarding **Claim 22**, Endo further discloses a conversion type specifying unit which generates information about a format of the image data prior to conversion and a format of the image data after the conversion (see Fig.4 and Col.4, Line 38-48), the information being supplied to the conversion request generating unit (see Col.6, Line 18-28 and Col.6, Line 33-35).

22. Regarding **Claim 23**, Endo further discloses wherein the request generating unit generates the conversion request responsive to the information supplied to the from the conversion type specifying unit (see Fig.9 (S902,S903), Col.6, Line 18-28 and Col.6, Line 33-35).

23. Regarding **Claim 24**, Endo further discloses a memory area allocating unit which allocates a memory area in which the image data to be converted by the electronic device and the converted image data are stored (see Fig.2 (203) and Col.3, Line 32-44).

24. Regarding **Claim 25**, Endo discloses a method of converting image data by use of a plurality of conversion units configured to convert the image data and a control unit configured to control the conversion units (see Fig.3 (305,308), Col.3, Line 28-44 and Col.3, Line 57-66), comprising the steps of: notifying the control unit of a type of conversion that is to be performed with respect to the image data (see Fig.9 (S902,S903), Col.6, Line 18-28 and Col.6, Line 33-35); selecting, by the control unit, one of the conversion units in response to the notified type of conversion (see Fig.3 (302,308), Fig.9 (S909) and Col.6, Line 46-51); supplying, from the control unit to the selected one of the conversion units, a signal (command) indicative of a start of transfer of the image data (see Fig.3 (302,308), Fig.9 (S907,S909) and Col.5, Line 45-50); and transferring the image data from the control unit to the selected one of the conversion units (see Fig.3 (302,308), Fig.9 (S907,S909) and Col.5, Line 45-50). Endo fails to disclose supplying, from the control unit to the selected one of the conversion units, a clock signal that provides synchronization for transfer of the image data. Grosse, however, discloses an image data compression method wherein a clock (counter) and a buffer are used to synchronize

predetermined blocks of image data into a compression processor unit for image conversion (see Fig.12 (340,354,362), Col.13, Line 26-39, Col.13, Line 45-53 and Col.14, Line 12-14).

25. Endo and Grosse are combinable because they are from the same field of endeavor, namely image data compression methods. At the time of the invention, it would have been obvious for one skilled in the art to include to Endo's device a clock unit configured to provide synchronization between the control unit and at least one of the conversion units for transfer of image data. The motivation would be to regulate the transmission of image data to the image conversion units at a predetermined rate. The synchronizing clock unit can ensure steady flow of image data into the compression processor to increase processing efficiency.

26. Regarding **Claim 26**, Endo further discloses transferring the converted image data from the selected one of the conversion units back to the control unit for transmitting the converted image data to a designated receiver unit (see Fig.3 (302,305,308,309) and Col.5, Line 53-56). Endo fails to disclose transmitting, from the selected one of the conversion units, a clock signal that provides synchronization for transfer of converted image data. Grosse, however, teaches a clock (counter) and a buffer to synchronize predetermined blocks of converted image data to an output destination (see Fig.12 (314,340,354,362), col.13, Line 41-53 and Col.14, Line 12-14). At the time of the invention, it would have been obvious to include to Endo's method a means for transmitting, from the selected one of the conversion units, a clock signal that provides synchronization for transfer of converted image data. The motivation would be to regulate the transmission of converted image data to the designated output destinations at a predetermined rate. The synchronizing clock unit can ensure steady flow of processed image data to an image data output unit.

27. Regarding **Claim 27**, Endo discloses a method of converting image data by use of a plurality of conversion units configured to convert the image data (see Fig.3 (305,308), Col.3, Line 28-44 and Col.3, Line 57-66), a control unit configured to control the conversion units (see Fig.3 (308) and Col.5, Line 45-53), and a conversion request generating unit configured to request conversion (see Fig.9 (S902,S903), Col.6, Line 18-28 and Col.6, Line 33-35), comprising the steps of: generating, by the conversion request generating unit, information about the type of conversion that is to be performed wit respect to the image data (see Fig.9 (S902,S903), Col.6, Line 18-28 and Col.6, Line 33-35); instructing, by the conversion request generating unit, the control unit to perform the conversion based on the information (see Fig.3 (302,308), Fig.9 (S909) and Col.6, Line 46-51); selecting, by the control unit, one of the conversion units in response to the notified type of conversion (see Fig.3 (302,308), Fig.9 (S909) and Col.6, Line 46-51); supplying, from the control unit to the selected one of the conversion units, a signal (command) indicative of a start of transfer of the image data (see Fig.3 (302,308), Fig.9 (S907,S909) and Col.5, Line 45-50); and transferring the image data from the control unit to the selected one of the conversion units (see Fig.3 (302,308), Fig.9 (S907,S909) and Col.5, Line 45-50). Endo fails to disclose supplying, from the control unit to the selected one of the conversion units, a clock signal that provides synchronization for transfer of the image data. Grosse, however, discloses an image data compression method wherein a clock (counter) and a buffer are used to synchronize predetermined blocks of image data into a compression processor unit for image conversion (see Fig.12 (340,354,362), Col.13, Line 26-39, Col.13, Line 45-53 and Col.14, Line 12-14).

28. Endo and Grosse are combinable because they are from the same field of endeavor, namely image data compression methods. At the time of the invention, it would have been obvious for one skilled in the art to include to Endo's device a clock unit configured to provide synchronization between the control unit and at least one of the conversion units for transfer of image data. The motivation would be to regulate the transmission of image data to the image conversion units at a predetermined rate. The synchronizing clock unit can ensure steady flow of image data into the compression processor to increase processing efficiency.

29. Regarding **Claim 28**, Endo further discloses a step of notifying, by the control unit, the conversion request generating unit of a completion of the conversion of the image data (see Fig.10B (S1013,S1014) and Col.8, Line 14-22).

30. Claims 3-4, 6-7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (US Patent 6,801,340 B1) in view of Grosse et al. (US Patent 5,636,294), and in further view of Ohara (US Patent 7,072,060 B2).

31. Regarding **Claim 3**, Endo and Grosse teach the apparatus of Claim 1 but fail to disclose wherein the control unit supplies to one of the conversion units a signal indicating that the image data being transferred is a sub-scan portion of the image data when the sub-scan portion of the image data is being transferred to one of the conversion units. Ohara, however, teaches an image data compression apparatus (see Fig.2 (108,113,115) and Col.5, Line 55 – Col.6, Line 12) wherein the main-scan lines and the sub-scan lines of the image data is read in and processed (see Fig.4A (303,306,308,321) and Col.7, Line 27-42). Ohara further teaches supplying a signal indicating that the image data being transferred and processed is either a sub-scan portion of the

image data or a main-scan line portion of the image data (see Fig.4A (303,306,308,321) and Col.7, Line 43-46).

32. Endo, Grosse and Ohara are combinable are combinable because they are from the same field of endeavor, namely image data compression systems. At the time of the invention, it would have been obvious for one skilled in the art to include to Endo's device a mechanism for supplying to one of the conversion units a signal indicating that the image data being transferred is a sub-scan portion of the image data a main-scan line portion of the image data. The motivation would be to select the appropriate image data conversion engine for the scan line image data. The main-scan lines may require a particular image data conversion engine for processing the main-scan lines, while the sub-scan lines may require a another image data conversion engine that is different. The main-scan lines and sub-scan lines are likely to use different compression methods and therefore, it would be beneficial to notify the conversion units which scan-line portion of the image data is being transmitted.

33. Regarding **Claim 4**, the rationale provided for the rejection of Claim 3 is incorporated herein.

34. Regarding **Claim 6**, Endo and Grosse teach the apparatus of Claim 1 but fail to disclose wherein one of the conversion units supplies to the control unit a signal indicating that the image data being transferred is a sub-scan portion of the image data when the sub-scan portion of the converted image data is being transferred to the control unit. Ohara, however, teaches an image data compression apparatus (see Fig.2 (108,113,115) and Col.5, Line 55 – Col.6, Line 12) wherein the main-scan lines and the sub-scan lines of the image data is read in and processed (see Fig.4A (303,306,308,321) and Col.7, Line 27-42). Ohara further teaches supplying a signal

indicating that the image data being transferred and processed is either a sub-scan portion of the image data or a main-scan line portion of the image data (see Fig.4A (303,306,308,321) and Col.7, Line 43-46).

35. At the time of the invention, it would have been obvious for one skilled in the art to include to Endo's device a mechanism for supplying to the control unit a signal indicating that the image data being transferred is either a sub-scan portion of the converted image data or the main-scan portion of the converted image data. The motivation would be to select the appropriate image data decompression engine for expanding the compressed image data. The main-scan lines and sub-scan lines are likely to use different compression methods. Therefore, it would be beneficial to notify the control units which scan-line portion of the converted image data is being transmitted in order to send the scan-line portions of the image data to the appropriate decompression engines.

36. Regarding **Claim 7**, the rationale provided for the rejection of Claim 6 is incorporated herein.

37. Regarding **Claim 11**, Endo and Grosse teach the device of Claim 8 but fail to disclose wherein the interruption unit outputs the interruption signal in response to an error occurring during the conversion of the image data. Ohara, however, teaches an interruption unit for outputting the interruption signal in response to detecting the image data amount to be exceeding a limit, and routing the image data to s second compression engine to continue processing (see Fig.2 (108,113,115), Fig.6 (S505,S508,S511) and Col.13, Line 1-24). At the time of the invention, it would have obvious for one skilled in the art to include to the interruption unit a mechanism for outputting the interruption signal in response to an error occurring during the

conversion of the image data. The motivation would be to discontinue the current conversion of the image data and to send a notification to the controller (or display) that an error has occurred.

Conclusion

38. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vu B. Hang whose telephone number is (571)272-0582. The examiner can normally be reached on Monday-Friday, 9:00am - 6:00pm.

39. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on (571) 272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

40. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vu B. Hang/
Examiner, Art Unit 2625

/Mark K Zimmerman/

Supervisory Patent Examiner, Art Unit 2625